

WHAT IS CLAIMED:

1. A method for compressing information used for rendering shadows, the method comprising:
 - determining that each sample of a subset of samples is associated with an equivalent degree of shadowing for a portion of a computer-generated image; and
 - generating an indicator representing said degree of shadowing associated with said subset of samples.
2. The method of claim 1 wherein each sample of said subset of samples is contiguous with other samples of said subset.
3. The method of claim 1 further comprising transmitting said indicator to decrease an amount of data traffic.
4. The method of claim 1 wherein said degree of shadowing corresponds to a number of stencil shadow volumes associated with said subset.
5. The method of claim 1 wherein said determining that each sample is associated with said degree of shadowing comprises:
 - identifying a visible geometry (“VG”) depth range for said subset; and
 - determining whether said VG depth range overlaps a shadow volume boundary (“SVB”) depth range.
6. The method of claim 5 further comprising prohibiting the generation of said indicator if said VG depth range overlaps said SVB depth range.
7. The method of claim 5 further comprising determining whether said VG depth range overlaps another SVB depth range.
8. The method of claim 1 wherein generating said indicator comprises:

forming said indicator having a first value if said subset is associated with a first degree of shadowing; and

forming said indicator having a second value if said subset is associated with a second degree of shadowing.

9. The method of claim 1 wherein generating said indicator comprises:

forming said indicator having a first value if said subset is associated with a first degree of shadowing; and

forming multiple indicators each having one of a multiple values if said subset is associated with multiple degrees of shadowing.

10. The method of claim 8 wherein

said first degree of shadowing represents that each sample of said subset is illuminated, and

said second degree of shadowing represents that each sample of said subset is associated with one or more stencil shadow volumes,

wherein said second degree represents that each said sample is shadowed.

11. The method of claim 1 wherein said indicator further comprises a location identifier for locating on a view plane where said subset is rendered.

12. The method of claim 1 wherein said indicator is configured to cause a rendering process to forego an update to a frame buffer.

13. The method of claim 1 wherein said indicator is configured to cause a rendering process to forego a computation in rendering a shadow.

14. A method for accelerating the rendering of shadows using stencil shadow volumes, the method comprising:
- detecting a shadow volume boundary (“SVB”);
 - updating a plurality of delta count buffers in response to detecting said SVB, where data is stored in each of said plurality of delta count buffers represents a degree of shadowing for a sample; and
 - characterizing a subset of said plurality of delta count buffers based on said degree of shadowing.
15. The method of claim 14 wherein characterizing said subset comprises:
- determining that each sample of said subset is associated with a common value;
 - coalescing said degrees of shadowing for each said sample by updating a tile stencil to include said common value; and
 - deallocating memory associated with each of said plurality of delta count buffers, wherein each sample of said subset of samples is contiguous with other samples of said subset, the contiguous samples forming a quad.
16. The method of claim 15 wherein coalescing said degrees of shadowing further comprises subtracting said common value from each of said plurality of delta count buffers.
17. The method of claim 15 wherein each of said plurality of delta count buffers have fewer bits than said a tile stencil buffer storing said tile stencil, said plurality of delta count buffers each having 3 bits and said tile stencil buffer having 8 bits, thereby minimizing use of memory.
18. The method of claim 15 wherein the characterization of said subset is used to form an indicator representing that each sample of said subset of delta count buffers is associated with a common degree of shadowing.
19. The method of claim 18 wherein said indicator is configured to cause a graphics processing unit (“GPU”) to forego an update to a frame buffer.

20. The method of claim 18 wherein said indicator is configured to cause a graphics processing unit (“GPU”) to forego a computation in rendering a shadow.
21. The method of claim 14 wherein the characterization comprises:
determining that at least two samples of said subset are not associated with a common value; and
indicating that said subset is not associated with an indicator representing that each sample is associated with a common degree of shadowing.
22. An apparatus for accelerating the rendering of shadows using stencil shadow volumes, the apparatus comprising:
a plurality of delta count buffers to store a degree of shadowing for each sample of a subset of samples;
a co-processor coupled to said plurality of delta count buffers and configured to generate an indicator that represents a common degree of shadowing associated with said subset of samples; and
a graphics processing unit (“GPU”) coupled to said co-processor and configured to render one or more shadows for a computer-generated image based on said indicator.
23. The apparatus of claim 22 further comprising at least one tile stencil for storing said indicator.
24. The apparatus of claim 23 further comprising at least one validity identifier configured to indicate that said tile stencil contains a valid indicator.